APRISTURUS ATLANTICUS (KOEFOED, 1927), A JUNIOR SYNONYM OF *A. LAURUSSONII* (SAEMUNDSSON, 1922) (CHONDRICHTHYES: CARCHARHINIFORMES: SCYLIORHINIDAE)

by

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ABSTRACT. - Morphological comparison of the holotype of *Apristurus atlanticus* with many specimens of *A. laurussonii*, *A. parvipinnis* and *A. canutus* revealed that the holotype of *A. atlanticus* is a juvenile of *A. laurussonii*. The differences observed between the holotypes of *A. atlanticus* and *A. laurussonii* are explained by size difference. As a result, *A. atlanticus* is placed under synonymy of *A. laurussonii*.

RÉSUMÉ. - *Apristurus atlanticus* (Koefoed, 1927), un synonyme junior d'*A. laurussonii* (Saemundsson, 1922) (Chondrichthyes : Carcharhiniformes : Scyliorhinidae).

La comparaison morphologique de l'holotype d'*Apristurus atlanticus* avec de nombreux spécimens d'*A. laurussonii*, d'*A. parvipinnis* et d'*A. canutus* révèle que l'holotype d'*A. atlanticus* est un juvénile d'*A. laurussonii*. Les différences observées entre les holotypes d'*A. atlanticus* et d'*A. laurussonii* s'expliquent par la différence de taille. *A. atlanticus* est ainsi placé en synonymie avec *A. laurussonii*.

Key words. - Scyliorhinidae - *Apristurus atlanticus* - *A. laurussonii* - ANE - Synonymy.

The genus *Apristurus* Garman, 1913 comprises a group of deep-water catsharks, inhabiting continental slopes and submarine elevations between 500 and 2100 m depth, in all oceans except polar areas. *Apristurus* is one of the largest genus of living catsharks with 32 species currently recognized as valid and 42 nominal species. Taxonomic revisions have been made by Springer (1966, 1979), Nakaya (1975, 1991), Cadenat and Blache (1981), Compagno (1984, 1988), Nakaya and Séret (1989, 1992) and Nakaya and Sato (1997, 1998, 2000). Taxonomic confusion still exists in the genus because many species are homogeneous in morphology and available material is lacking for many species. Twelve nominal species have been described from the Atlantic Ocean; *A. profundorum* (Good & Bean, 1895) and *A. manis* Springer, 1979 from the Western North Atlantic; *A. riveri* Bigelow & Schroeder, 1944, *A. canutus* Springer & Heemstra, 1979 in Springer (1979) and *A. parvipinnis* Springer & Heemstra, 1979 in Springer (1979), from the Caribbean Sea or Gulf of Mexico; *Scyllium? spinacipellitum* Vaillant, 1888, *A. laurussonii* (Saemundsson, 1922), *A. atlanticus* (Koefoed, 1927), *A. maderensis* Cadenat & Maul, 1966 and *A. aphyodes* Nakaya & Stehmann, 1998 from the Eastern North Atlantic and *A. microps* (Gilchrist, 1922) and *A. saldanha* Barnard, 1925 from South African waters. Holotypes of two species (*A. microps* and *A. saldanha*) are missing, and those of *A. profundorum* and *S.? spinacipellitum* are fragile and broken at present.

Taxonomical information of the genus in North Atlantic has recently been accumulated, with synonymisations of *A. maderensis* under *A. laurussonii* (Nakaya and Sato, 1998), *S.? spinacipellitum* under *A. atlanticus* (Nakaya and Séret, 1989), and the description of *A. aphyodes* (Nakaya and Stehmann, 1998).

A. atlanticus was described from a single small immature specimen, from off the Canary Islands in Eastern North Atlantic Ocean. It is a poorly known species and no reliable taxonomic information has been given since its description by Koefoed (1927). In his description, Koefoed (1927) compared the species with *A. profundorum*, *A. indicus* (Brauer, 1906) and *A. sibogae* (Weber, 1913) described from the Western North Atlantic, Western North Indian and Western Central Pacific oceans respectively. However, Koefoed (1927) did not compare his species with *A. laurussonii*, which was described five years before from the Eastern North Atlantic. Compagno (1984) redescribed *A. atlanticus*, based on the holotype and also non-type specimens collected from the Eastern North Atlantic, but as suggested by Nakaya and Sato (1998), his description of *A. atlanticus* apparently includes two species *A. atlanticus* and *A. aphyodes*. Later, Nakaya and Sato (1998) briefly discussed the taxonomic relation of *A. atlanticus* with *A. laurussonii*, suggesting the possibility of different species, but it still remains unsolved taxonomically.

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Here we discuss the taxonomic status of *Apristurus atlanticus*, based on many comparative materials.

MATERIALS AND METHODS

Apristurus atlanticus (Koefoed, 1927)

Holotype. - ZMUB 3203, immature male, 247 mm in total length (TL), "Michael Sars" expedition, station 41, 23 May 1910, off Canary Islands, 28°08'N, 13°35'W, 1365 m depth.

Apristurus laurussonii (Saemundsson, 1922)

132 specimens (45 catalogued, 87 uncatalogued).

Holotype. - NHMR (no catalogue number), mature female, 663 mm TL, 15 July 1915, off Vestmannaeyjar Island, 560 m depth.

Non-types. - (n = 131). 44 catalogued specimens: MNHN 2003-1070, female, 124 mm TL; MNHN 1987-0965, male, 578 mm TL; MNHN 1989-0680, male, 678 mm TL; MNHN 1999-0900, male, 710 mm TL; MNHN 1999-0904, female, 649 mm TL; MNHN 1999-0905, female, 509 mm TL; MNHN 1999-0906, male, 674 mm TL; MNHN 1999-0912, female, 571 mm TL; MNHN 1999-0915, male, 384 mm TL; MNHN 1999-0916, male, 323 mm TL; MNHN 1999-0917, female, 415 mm TL; MNHN 1999-0919, female, 366 mm TL; MNHN 1999-0920, female, 352 mm TL; MNHN 1999-0921, female, 379 mm TL; MNHN 1999-0922, female, 365 mm TL; MNHN 1999-0923, female, 546 mm TL; MNHN 1999-0924, female, 645 mm TL; MNHN 1999-0926, female, 507 mm TL; MNHN 1999-0928, male, 550 mm TL; MNHN 1999-0930, male, 657 mm TL; MNHN 1999-0931, male, 556 mm TL; MNHN 1999-0937, male, 597 mm TL; MNHN 2000-1745, female, 609 mm TL; MNHN 2000-1746, male, 540 mm TL; MNHN 2000-1748, male, 595 mm TL; MNHN 2000-1749, male, 309 mm TL; MNHN 2000-1750, female, 309 mm TL; MNHN 2000-1751, female, 300 mm TL; MNHN 2000-1752, male, 260 mm TL; MNHN 2000-1753, male, 200 mm TL; HUMZ 156759, male, 644 mm TL; HUMZ 156760, female, 601 mm TL; HUMZ 156761, female, 324 mm TL; IOS Sm13, male, 209 mm TL; IOS 9008, female, 217 mm TL; IOS 9018, female, 550 mm TL; IOS 11543, female, 449 mm TL; ISH 51/1965, female, 632 mm TL; ISH 70/1965, female, 594 mm TL; ISH 23/1981, 3 specimens, female, males, 612, 618 and 713 mm TL respectively; ISH 109/1981, female, 591 mm TL; ISH 1052/1982, female, 387 mm TL. 87 uncatalogued specimens, studied mainly for biological examination: males and females, 292 to 734 mm TL.

Apristurus canutus Springer & Heemstra, 1979

14 catalogued specimens.

Holotype. - USNM 206176, female, 451 mm in total length (TL).

Paratypes. - (n = 5). USNM 206180, males, 318 and 388 mm TL, female, 393 mm TL, males, 397 and 433 mm TL.

Non-types. - (n = 8). USNM 221254, female, 229 mm TL; USNM 221293, female, 436 mm TL; USNM 221294, males, 298 and 360 mm TL; USNM 221295, female, 390 mm TL; USNM 221297, female, 208 mm TL; USNM 221299, female, 351 mm TL; ZMB 31556, female, 415 mm TL.

Apristurus parvipinnis Springer & Heemstra, 1979

28 catalogued specimens.

Holotype. - USNM 206178, male, 472 mm TL.

Paratypes. - (n = 3). USNM 220969, female, 403 mm TL. USNM 206179, female, 466 mm TL.

Non-types. - (n = 25). USNM 165557, female, 297 mm TL; USNM 201906, males, 426 and 472 mm TL; USNM 221451, female, 483 mm TL; USNM 221487, female, 296 mm TL; USNM 221488, male, 313 mm TL; USNM 221489, female, 457 mm TL; USNM 221490, female, 282 mm TL; USNM 221496, male, 346 mm TL; USNM 221500, female, 490 mm TL; USNM 221502, male, 414 mm TL; USNM 221508, females, 385 and 520 mm TL; USNM 221537, female, 480 mm TL; USNM 221639, female, 514 mm TL; USNM 221640, male, 479 mm TL, female, 464 mm TL, male, 481 mm TL; UF27946, male, 283 mm TL; UF 39943, female, 258 mm TL, male, 398 mm TL; UF 45231, males, 440 and 491 mm TL; MCZ, 40249, male, 331 mm TL; ZMB, 31555, female, 408 mm TL.

Institutional acronyms follow Leviton *et al*. (1985). Morphometric measurements are those of Bigelow and Schroeder (1948), and Nakaya and Stehmann (1998), and vertebral counts and terminology follow Springer and Garrick (1964). Vertebral counts were determined from x-rays for *A. atlanticus*, *A. canutus* and *A. parvipinnis* and either x-rays or dissection for *A. laurussonii*.

RESULTS AND DISCUSSION

Tables I, II and III provide morphometric and meristic data of the *Apristurus* species.

We compared the holotype of *A. atlanticus* with the other three species, based on 132 specimens of *A. laurussonii* ranging from 124 to 734 mm in total length (TL), 28 specimens of *A. parvipinnis* from 258 to 520 mm TL and 14 specimens of *A. canutus* from 208 to 451 mm TL, including holotypes and paratypes of these species. Holotypes of *A. atlanticus* and *A. laurussonii* are shown in figure 1.

The relation of first and second dorsal fin heights indicates that *A. atlanticus* and *A. laurussonii* have a higher first dorsal fin than *A. canutus* and *A. parvipinnis* (Fig. 2). The first dorsal fin overall length is 8.7% TL for *A. atlanticus* and 9.9% ± 0.7% for *A. laurussonii*, whereas it is only 6.6% ± 0.4% and 6.9% ± 0.5% for *A. parvipinnis* and *A. canutus* respectively. These data indicate that *A. atlanticus* and *A. laurussonii* have much larger first dorsal fin than *A. parvipinnis* and *A. canutus*. Also, first dorsal fin is only slightly smaller than second dorsal fin in *A. atlanticus* and *A. laurussonii*, but first dorsal of *A. parvipinnis* and *A. canutus* is considerably smaller than second dorsal fin.

Figure 3 shows the relation of anal fin base length and distance from pectoral fin tip to pelvic fin origin, in the four species. *A. canutus* is unique among these species in having longer anal fin base and shorter pectoral to pelvic distance.

The holotypes of *A. atlanticus* and *A. laurussonii* have 43

Table I. - Proportional measurements (% of total length) of the holotype of *Apristurus atlanticus* and 54 specimens of *A. laurussonii*.

	A. atlanticus	*A. laurussonii*					
	Holotype	10 small specimens			All 54 specimens		
TL (mm)	247	124 - 352			124 - 713		
Sex (n)	Male	Males (4) - Females (6)			Males (21) - Females (33)		
		Range	Mean ± SD	n	Range	Mean ± SD	n
1 Snout tip to anterior nostril	4.7	3.9 - 5.5	4.9 ± 0.6	10	3.5 - 5.7	4.5 ± 0.5	54
2 Snout tip to posterior nostril	6.6	6.5 - 9.2	7.5 ± 0.8	10	5.8 - 9.2	7.1 ± 0.7	32
3 Snout tip to mouth	8.3	7.3 - 11.0	9.0 ± 1.1	10	6.8 - 11.0	8.6 ± 1.0	54
4 Snout tip to eye	9.8	9.2 - 11.6	10.1 ± 0.9	10	7.9 - 11.6	9.5 ± 0.8	54
5 Snout tip to 1st gill opening	17.8	15.8 - 19.4	17.6 ± 1.2	10	14.9 - 19.7	17.3 ± 1.2	54
6 Snout tip to 5th gill opening	21.3	20.2 - 24.6	22.0 ± 1.7	6	18.8 - 24.6	21.1 ± 1.3	41
7 Snout tip to cloaca	44.1	42.3 - 49.7	45.4 ± 2.0	10	42.3 - 49.8	47.3 ± 1.5	54
8 Snout tip to 1st dorsal fin origin	47.0	44.4 - 49.3	46.5 ± 1.8	10	44.4 - 51.6	48.4 ± 1.9	32
9 Snout tip to 2nd dorsal fin origin	59.9	57.7 - 63.3	60.5 ± 1.7	10	57.7 - 66.2	62.6 ± 2.1	32
10 Snout tip to pelvic fin origin	39.7	37.5 - 41.7	39.8 ± 1.1	10	37.5 - 49.8	41.4 ± 2.2	32
11 Snout tip to anal fin origin	51.0	46.8 - 54.5	51.6 ± 2.3	10	46.8 - 57.9	54.0 ± 2.3	32
12 Head width	11.9	10.7 - 11.7	11.2 ± 0.4	10	9.3 - 12.1	10.9 ± 0.7	29
13 Eye horizontal diameter	3.0	2.8 - 3.7	3.4 ± 0.3	10	2.5 - 3.9	3.3 ± 0.3	54
14 Nostril diameter	3.2	3.1 - 5.1	3.8 ± 0.6	10	2.4 - 5.1	3.3 ± 0.5	53
15 Mouth width	8.8	7.5 - 9.0	8.3 ± 0.4	10	7.1 - 9.6	8.1 ± 0.6	32
16 Internarial space	4.0	3.5 - 4.7	3.9 ± 0.4	10	3.0 - 4.7	3.6 ± 0.4	54
17 Interorbital space	7.4	6.3 - 7.5	6.8 ± 0.4	10	4.6 - 7.5	6.2 ± 0.6	32
18 Length upper labial furrow	2.7	2.3 - 4.0	3.1 ± 0.5	10	2.3 - 4.0	3.1 ± 0.3	54
19 Length lower labial furrow	2.0	1.8 - 3.0	2.4 ± 0.3	10	1.5 - 3.0	2.1 ± 0.3	54
20 Length 1st gill opening	1.7	1.2 - 2.0	1.7 ± 0.2	10	0.7 - 2.2	1.6 ± 0.3	51
21 Length 3rd gill opening	2.0	1.5 - 2.5	1.8 ± 0.3	8	1.0 - 2.7	1.8 ± 0.5	26
22 Length 5th gill opening	1.4	1.0 - 1.8	1.5 ± 0.3	10	1.0 - 2.4	1.6 ± 0.3	52
23 Distance between dorsal fin bases	7.2	7.0 - 9.5	8.2 ± 0.9	9	7.0 - 10.1	8.4 ± 0.8	31
24 Distance between dorsal fin insertions	14.2	14.0 - 15.8	14.8 ± 0.8	10	13.7 - 16.0	14.7 ± 0.6	52
25 Distance between pectoral fin insertion and pelvic fin origin	10.6	11.1 - 13.8	12.3 ± 0.9	10	11.1 - 16.8	13.7 ± 1.4	54
26 Distance between pectoral fin tip and pelvic fin origin	4.0	3.9 - 7.1	5.4 ± 1.1	10	3.9 - 10.2	7.1 ± 1.7	54
27 Distance between pelvic fin insertion and anal fin origin	5.3	1.3 - 6.5	4.1 ± 1.8	9	1.3 - 7.1	4.7 ± 1.4	50
28 Distance between pelvic fin insertion and anal fin insertion	20.1	18.5 - 22.3	20.4 ± 1.3	10	17.6 - 22.3	19.8 ± 1.3	31
29 Distance between pectoral and pelvic fins origins	17.0	16.5 - 20.3	18.8 ± 1.3	10	16.5 - 23.6	20.5 ± 1.8	31
30 Distance between nostril and mouth	1.6	1.8 - 2.3	1.9 ± 0.2	10	1.4 - 2.3	1.9 ± 0.2	31
31 1st dorsal fin overall length	8.7	8.4 - 10.7	9.6 ± 0.8	10	8.4 - 11.2	9.9 ± 0.7	31
32 1st dorsal fin height	1.7	1.6 - 2.3	1.9 ± 0.2	10	1.6 - 2.8	2.1 ± 0.3	31
33 2nd dorsal fin overall length	10.6	9.5 - 12.5	10.7 ± 0.9	10	9.5 - 12.5	10.6 ± 0.6	31
34 2nd dorsal fin height	2.1	2.0 - 3.1	2.5 ± 0.4	10	2.0 - 3.4	2.7 ± 0.4	31
35 Pectoral fin anterior margin length	11.3	9.3 - 12.3	10.7 ± 0.9	9	9.3 - 15.2	12.2 ± 1.2	52
36 Pectoral fin width	-	4.8 - 8.4	7.0 ± 1.5	5	6.5 - 9.5	8.3 ± 0.7	28
37 Pelvic fin overall length	9.3	8.0 - 12.2	10.1 ± 1.4	10	8.0 - 14.2	11.3 ± 1.6	32
38 Anal fin base length	14.9	14.9 - 16.7	15.9 ± 0.7	10	13.0 - 17.0	14.8 ± 1.1	53
39 Caudal fin lower margin	33.0	29.0 - 35.9	32.3 ± 2.1	10	28.5 - 35.9	30.4 ± 1.5	54
40 Caudal peduncle height	4.5	3.6 - 4.5	3.9 ± 0.3	10	3.5 - 4.7	4.1 ± 0.3	51

Table II. - Frequency distribution by spiral valve counts for *Apristurus atlanticus*, *A. laurussonii*, *A. parvipinnis* and *A. canutus*. Asterisks = holotypes. Bold numbers = most frequent counts.

	Spiral valve counts								
	14	15	16	17	18	19	20	21	22
A. atlanticus					**1***				
A. laurussonii			3	25	**37**	18	9		
A. parvipinnis					5	5*	5	6	1
A. canutus	2	1*	**6**	3					

monospondylous vertebrae (Tab. III), with a range of 41-44 in *A. laurussonii*, whereas *A. parvipinnis* and *A. canutus* have 37 to 40 and 33 to 36 monospondylous vertebrae respectively.

These data indicate that *A. atlanticus* is distinct from *A. parvipinnis* and *A. canutus*, but it is similar to *A. laurussonii*.

Nakaya and Sato (1998) suggested four differences between the holotype of *A. atlanticus* and that of *A. laurus-*

Table III. - Frequency distribution by monospondylous and precaudal diplospondylous vertebrae counts for *Apristurus atlanticus, A. laurussonii, A. parvipinnis* and *A. canutus*. Asterisks = holotypes. Bold numbers = most frequent counts.

	Monospondylous vertebrae counts												Precaudal diplospondylous vertebrae counts												
	33	34	35	36	37	38	39	40	41	42	43	44	29	30	31	32	33	34	35	36	37	38	39	40	41
A. atlanticus											**1***														
A. laurussonii									11	**16**	**18***	3	2	6	6	**14**	**11**	6	2						
A. parvipinnis					1*	**8**	**11**	4											**4**	**5**					
A. canutus	3	3*	4	4																	1	-	1	**3**	1

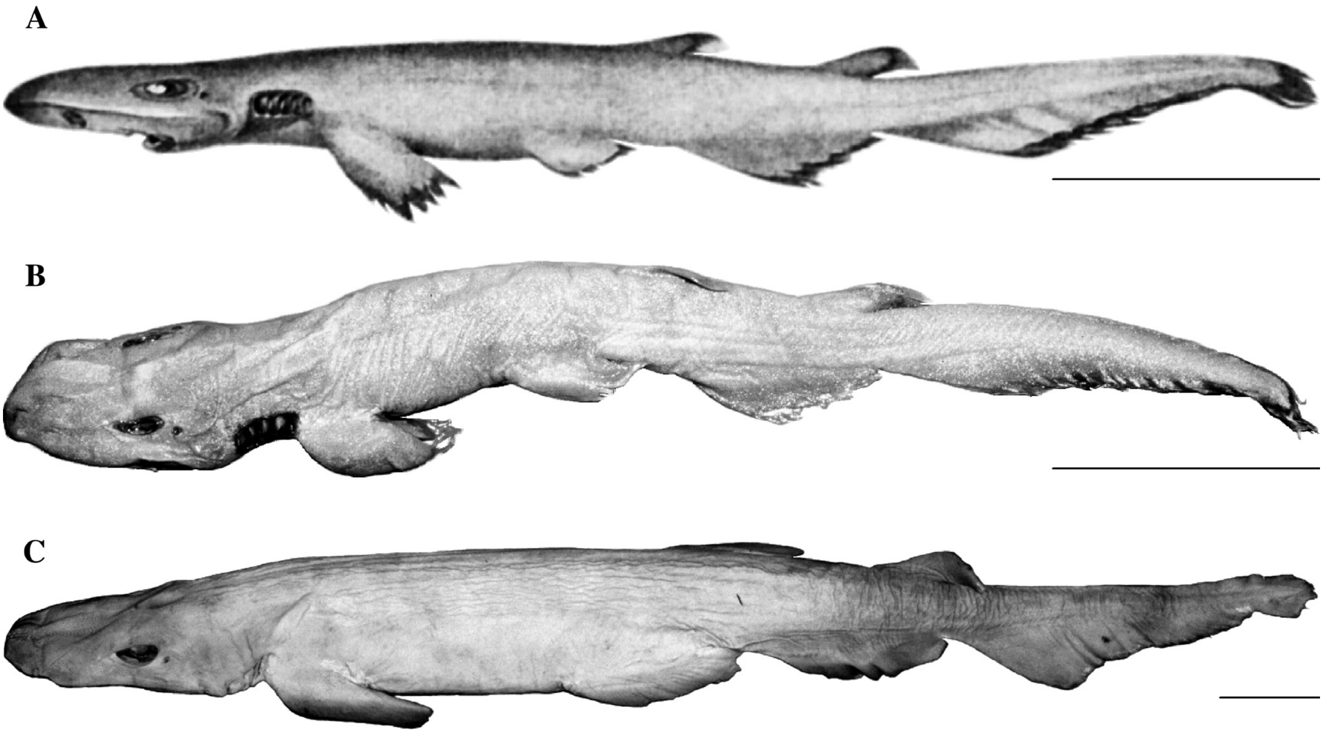

Figure 1. - **A**: Original drawing (Koefoed, 1927) of the holotype of *Apristurus atlanticus*, ZMUB 3203, immature male, 247 mm TL, Eastern North Atlantic, off Canary Islands; **B**: Photograph of the holotype of *A. atlanticus*; **C**: Holotype of *A. laurussonii*, NHMR (no catalogue number), mature female, 663 mm TL, Eastern North Atlantic, off South Iceland. Scale bars = 50 mm.

sonii: 1) Origin of first dorsal fin above posterior end of pelvic fin base in *A. atlanticus* whereas above posterior two thirds of pelvic fin base in *A. laurussonii*. 2) Shorter distance between origins of pectoral and pelvic fins than that from snout tip to pectoral fin in *A. atlanticus* whereas longer in *A. laurussonii*. 3) 70 and 68 tooth rows on upper and lower jaws respectively, in *A. atlanticus* whereas 102 and 106 rows in *A. laurussonii*. 4) Narrower dorsal fins in *A. atlanticus* than in *A. laurussonii*.

We re-examined these four differences based on 132 specimens identified as *A. laurussonii*, ranging from 124 to 734 mm TL, and it was revealed that on this species:

1) The origin of first dorsal fin is located between above posterior two thirds to posterior end of pelvic fin base.

2) The length from snout tip to pectoral fin is shorter than distance between origins of pectoral and pelvic fins in smaller individuals, but the former one becomes almost same or rather longer than the latter in larger individuals (Tab. I).

3) Tooth row counts show much variability, with a tendency to increase with growth, ranging 54 to 102 rows for the upper jaw and 43 to 106 rows for the lower (Figs 4, 5).

4) The smaller individuals tend to have narrower dorsal fins than larger individuals (Fig. 2).

The data indicate that such differences are not specific, but individual or intra-specific variation.

Among the measurements and counts of the holotypes of *A. atlanticus* and *A. laurussonii*, and additional 132 specimens of *A. laurussonii*, only one measurement is slightly out of the range. The distance between pectoral fin insertion and pelvic fin origin is 10.6% in the holotype of *A. atlanticus*, while 11.1-16.8% TL (11.1-13.8% TL for small specimens) in *A. laurussonii*. Considering shrinkage of abdomen caused during long storage in alcohol and the tendency of having shorter distance in smaller specimens (Fig. 3), this can be

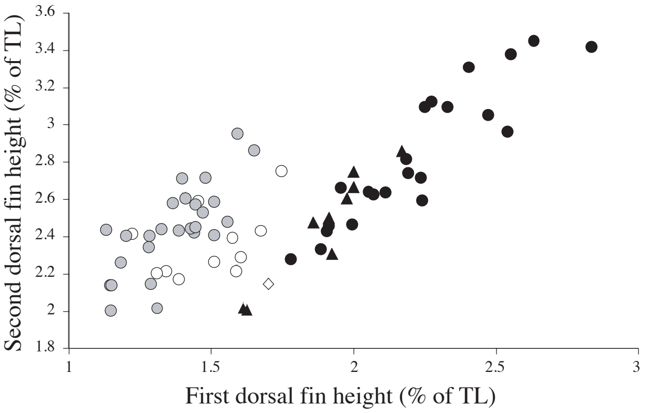

Figure 2. - Relation of first dorsal fin height with second dorsal fin height. White diamond: holotype of *Apristurus atlanticus*; black circles: *A. laurussonii*; black triangles: small specimens of *A. laurussonii*; grey circles: *A. parvipinnis*; white circles: *A. canutus*.

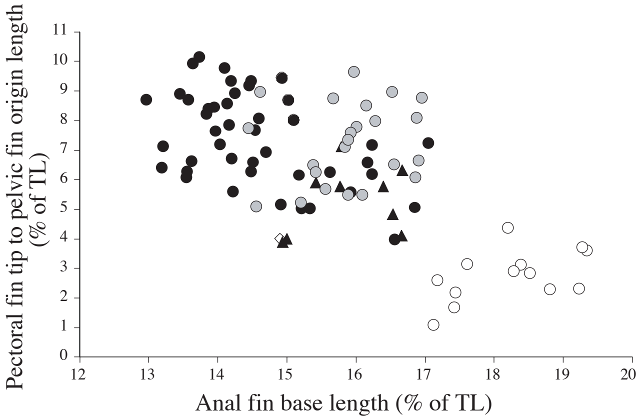

Figure 3. - Relation of anal fin base length with pectoral fin tip to pelvic fin origin length. White diamond: holotype of *Apristurus atlanticus*; black circles: *A. laurussonii*; black triangles: small specimens of *A. laurussonii*; grey circles: *A. parvipinnis*; white circles: *A. canutus*.

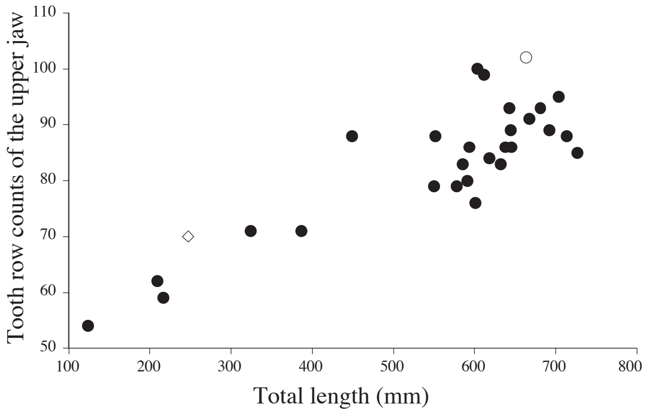

Figure 4. - Ontogenetic changes of tooth row counts on upper jaw. White diamond: holotype of *Apristurus atlanticus*; black circles: *A. laurussonii*; white circle: holotype of *A. laurussonii*.

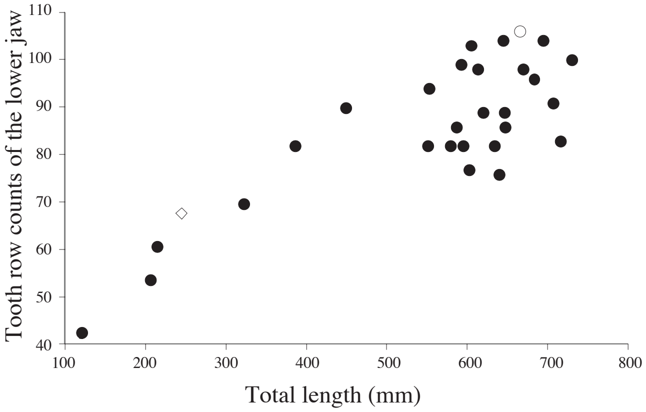

Figure 5. - Ontogenetic changes of tooth row counts on lower jaw. White diamond: holotype of *Apristurus atlanticus*; black circles: *A. laurussonii*; white circle: holotype of *A. laurussonii*.

ignored.

The available specimens of *A. laurussonii* indicate the geographical distribution of the species ranges from Iceland all the way south to Gabon, off West Africa, and the type locality of *A. atlanticus* is included in the distributional range of *A. laurussonii*.

Conclusively, we could not find any significant differences between the holotype of *A. atlanticus* and *A. laurussonii*. We therefore consider *A. atlanticus* to be a junior synonym of *A. laurussonii*, and give a description of *A. laurussonii* below.

APRISTURUS LAURUSSONII
(SAEMUNDSSON, 1922)

(Figs 1-5, Tabs I-III)

Scyllium? spinacipellitum Vaillant, 1888: 60, pl. I, figs 3 and 3a.

Scyllium laurussonii Saemundsson, 1922: 173-176, pl. IV, fig. 1 (not fig. 2 as write in the text), pl. V, fig. 4.

Scylliorhinus atlanticus Koefoed, 1927: 18-19, pl. III, fig. 3.

Apristurus atlanticus Compagno, 1984: 261-262, text except remarks, fig. of "holotype", not figs of adult and dermal denticles.

Apristurus maderensis Cadenat & Maul, 1966: 769-782, figs 1-4.

Apristurus maderensis Springer, 1979: 23; Cadenat and Blache, 1981: 186-188, fig. 127; Compagno, 1984: 272-273, figs; Quéro, 1984: 97, figs; Quéro *et al.*, 1993: 120, fig. 1a and 1b.

Description

Proportional measurements and meristic counts are given in tables I, II and III.

Body cylindrical (Fig. 1), head flattened, posterior part of body compressed laterally. Snout medium in length, preorbital length more than half of distance from snout tip to first gill opening. Snout tip to anterior nostril a little more than half of preoral snout length, 1.0 to 1.5 times the internarial width and 0.6 to 0.9 times the interorbital space; snout tip rounded. Nostril expanding obliquely inward from snout edges; their diameter a little less than internarial width and about equal to eye horizontal diameter. Internarial width 1.8 to 2.5 times the distance between nostril and mouth. Mouth arched, with well-developed labial furrows; upper furrow much longer than the lower one. Upper furrow more than half of the distance between mouth corner and posterior margin of nostril. Eye medium in size with a weak subocular fold. Spiracle small, placed slightly below level of horizontal axis of eye. Five small gill openings; 5th gill opening smallest above pectoral fin origin. Gill septum with or without a posterior projecting medial lobe.

Pectoral fins relatively large, wide and subquadrangular. Distance between pectoral fin tip and pelvic fin origin short; distance between pectoral fin tip and pelvic fin origin about 0.5 to 1.3 times pectoral fin width and 0.3 to 1.0 times the pelvic fin overall length. Pelvic fin moderate in size. First dorsal fin slightly smaller than 2nd dorsal fin; its origin over posterior two third of pelvic fin base, its insertion above interspace between pelvic and anal fins; second dorsal fin origin above middle of anal fin base; its insertion slightly before that of anal fin. Anal fin with a base longer than the distance between pectoral fin tip and pelvic fin origin; posterior margin straight. Anal and caudal fins separated only by a notch. Caudal fin with a well-developed subterminal lobe and a distinct subterminal notch; lower lobe low with a slightly concave margin. Caudal peduncle height about half of the preoral distance.

Numerous pores of Lorenzini's ampullae conspicuous on dorsal and ventral surface of snout. First deviation of the lateral line distinctly in front of the first dorsal fin.

Dermal denticles from dorsolateral side of body very small, greatly overlapping and tricuspid, with very short lateral cusps; outer surface of denticles completely covered by reticulations and with three ridges. No modified dermal denticles on the dorsal margin of the caudal fin. Dermal denticles present around the gill opening, except in very small specimens. Gill septum partially covered by dermal denticles.

Teeth small in upper and lower jaws, each with a long central cusp and one to three smaller lateral cusps on each side of the central cusp. Lateral teeth with a larger number of cusps than teeth in the central part of the jaw. Tooth rows 54 to 102 on upper jaw and 43 to 106 on lower one; teeth with thin ridges on basal half of cusps.

Number of spiral valves 16 to 20, commonly 17 to 19 (Tab. II). Numbers of monospondylous vertebrae 41 to 44, commonly 42 or 43, precaudal diplospondylous vertebrae 29 to 35, commonly 32 or 33 (Tab. III).

Colour: Upper and lower surface of body and fins uniformly brown. The larger specimens paler, sometime beige and the smaller specimens dark grey-brown. Distal scaleless margins of fins and insertion of paired fins darker. Tongue and palatine black, peritoneum white. Pupils pale greenish yellow and bright, iris black, when fresh.

Sexual dimorphism: Adult females having wider head than adult males, with wider interorbital space and wider mouth and with a larger number of lateral cusps on teeth than males.

Distribution: Eastern North Atlantic from Iceland to Gabon, off West of Africa.

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REFERENCES

BIGELOW H.B. & W.C. SCHROEDER, 1948. - Sharks. *In*: Fishes of the Western North Atlantic (Tee-Van J., Breder C.M., Hildebrand S.F., Parr A.E. & W.C. Schroeder, eds). *Mem. Sears Found. Mar. Res., Yale Univ., New Haven*, 1: 56-576.

CADENAT J. & J. BLACHE, 1981. - Requins de Méditerranée et d'Atlantique (plus particulièrement de la côte occidentale d'Afrique). *Faune Trop*., 21: 1-330. Paris: ORSTOM.

CADENAT J. & G.E. MAUL, 1966. - Note d'ichthyologie ouest-africaine. 43. Description d'une espèce nouvelle du genre *Apristurus*, *Apristurus maderensis*. *Bull. Inst. Fond. Afr. Noire*, 28: 769-782.

COMPAGNO L.J.V., 1984. - FAO Species Catalogue. Vol. 4, Sharks of the World. 655 p. Rome: FAO.

COMPAGNO L.J.V., 1988. - Sharks of the Order Carcharhiniformes. 486 p. Princeton (New Jersey): Princeton Univ. Press.

KOEFOED E., 1932. - Fishes from the sea-bottom. *Rep. Sci. Result. "Michael Sars" N. Atlant. Deep-Sea Exped*., 4(1) (1927): 1-148.

LEVITON A.E., GIBBS R.H. Jr., HEAL E. & C.E. DAWSON, 1985. - Standards in herpetology and ichthyology: Part I. Standards symbolic codes for institutional resource collections in herpetology and ichthyology. *Copeia*, 1985: 802-832.

NAKAYA K., 1975. - Taxonomy, comparative anatomy and phylogeny of Japanese catsharks, Scyliorhinidae. *Mem. Fac. Fish. Hokkaido Univ*., 23: 1-94.

NAKAYA K., 1991. - A review of the long-snouted species of *Apristurus* (Chondrichthyes, Scyliorhinidae). *Copeia*, 1991: 992-1002.

NAKAYA K. & K. SATO, 1997. - Species grouping within the genus *Apristurus* (Elasmobranchii, Scyliorhinidae). *In*: Proc. Indo-Pacific Fish Conference, Nouméa (Séret B. & J.-Y. Sire, eds), pp. 307-320. Paris: Société Française d'Ichtyologie & Institut de Recherche pour le Développement.

NAKAYA K. & K. SATO, 1998. - Taxonomic review of *Apristurus laurussonii* (Saemundsson, 1922) from the Eastern North Atlantic (Elasmobranchii: Scyliorhinidae). *Cybium*, 22: 149-157.

NAKAYA K. & K. SATO, 2000. - Taxonomic review of *Apristurus platyrhynchus* and related species from the Pacific Ocean (Chondrichthyes, Carcharhiniformes, Scyliorhinidae). *Ichthyol. Res.*, 47: 223-230.

NAKAYA K. & B. SÉRET, 1989. - *Scyllium spinacipellitum* Vaillant, 1888, a senior synonym of *Apristurus atlanticus* (Koefoed, 1927) (Chondrichthyes, Scyliorhinidae). *Bull. Mus. natl. Hist. nat., Paris*, 4ème sér., sec. A, (4): 977-982.

NAKAYA K. & B. SÉRET, 1992. - *Scylliorhinus atlanticus* Koefoed, 1927 (currently *Apristurus atlanticus*; Chondrichthyes, Carcharhiniformes): Proposed conservation of the specific name. *Bull. Zool. Nom.*, 49: 49-51.

NAKAYA K. & M. STEHMANN, 1998. - A new species of deepwater catsharks, *Apristurus aphyodes* n. sp., from the Eastern North Atlantic (Chondrichthyes: Carcharhiniformes: Scyliorhinidae). *Arch. Fish. Mar. Res.*, 46: 77-90.

QUÉRO J.-C., 1984. - Scyliorhinidae. *In*: Fishes of the North-Eastern Atlantic and the Mediterranean, Vol. I (Whitehead P.J.P., Bauchot M.-L., Hureau J.-C., Nielsen, J. & E. Tortonese, eds), pp. 95-100. Bungay: UNESCO.

QUÉRO J.-C., DU BUIT M.-H., FONTENEAU J., MORANDEAU G. & J.-J. VAYNE, 1993. - Observations ichtyologiques effectuées en 1992. *Ann. Soc. Sci. Nat. Charente-Marit.*, 8: 119-124.

SAEMUNDSSON B., 1922. - Zoologiske Meddelelser fra Island. *Vidensk Medd. Dansk Naturhist. Foren Kobenhavn*, 74: 159-201.

SPRINGER S., 1966. - A review of Western Atlantic catsharks, Scyliorhinidae, with descriptions of a new genus and five new species. *U.S. Fish. Wildl. Serv., Fish. Bull.*, 65: 581-624.

SPRINGER S., 1979. - A revision of the catsharks, family Scyliorhinidae. *NOAA Tech. Rep. NMFS, Circ.*, 422: 1-152.

SPRINGER V.G. & J.A.F. GARRICK, 1964. - A survey of vertebral numbers in sharks. *Proc. U.S. Nat. Mus.*, 116: 73-96.

VAILLANT L., 1888. - Poissons. *In*: Expéditions scientifiques du Travailleur et du Talisman pendant les années 1880-1883. 406 p. Paris: Masson et Cie.

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